



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
75 Hawthorne Street  
San Francisco, CA 94105  
SFD 8-3

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ALAMEDA POINT  
SSIC NO. 5090.3

March 16, 2005

Thomas Macchiarella  
BRAC Operations, Code 06CA.TM  
Department of the Navy, Southwest Division  
Naval Facilities Engineering Command  
1230 Columbia Street, Suite 1100  
San Diego, CA 92101

RE: **Draft Feasibility Study Report for Operable Unit 1, Installation Restoration Sites 6, 7, 8 and 16, Alameda Point**

Dear Mr. Macchiarella:

EPA has reviewed the above referenced document, prepared by Tetra Tech EM Inc. and submitted by the Navy to the agencies on December 2, 2004. EPA requested a 30 day extension for review of the document, in accordance with the FFA, and the State request a further 14 day extension making comments from the agencies due on March 18, 2005. The Draft Final Feasibility Study for Operable Unit 1 will be due for submittal by the Navy on May 18, 2005, unless the Navy chooses to request an additional 30 day extension to that date.

We appreciate the effort the Navy has made to address concerns EPA, DTSC and the Regional Board raised during the review of the Remedial Investigation Report for OU 1. We look forward to resolving the comments on the Draft FS with you and moving Sites 6, 7, 8 and 16 into the Proposed Plan and Record of Decision phase. I can be reached at (415) 972-3029.

Sincerely,

Anna-Marie Cook  
Remedial Project Manager

- Enclosures: 1. EPA Comments on the OU 1 FS  
2. Cover Page and Table 2 from CalEPA CHHSLs

cc list next page

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ERAC OFFICE

cc list: Glenna Clark, SWDiv  
Marcia Liao, DTSC  
Judy Huang, RWQCB  
Elizabeth Johnson, City of Alameda  
Peter Russell, Russell Resources, Inc  
Jean Sweeney, RAB Co-Chair  
Suzette Leith, EPA  
Sophia Serda, EPA  
Karla Brasaemle, TechLaw Inc

**Review of the Draft Feasibility Study Report  
Operable Unit 1 Site 6, 7, 8, and 16  
Alameda Point**

**GENERAL COMMENTS:**

1. The executive summary of an FS should give the reader a snap shot of what to expect in the document. This is especially crucial in a complicated document like this one that involves 4 sites, 2 media, and multiple contaminants. It would be helpful to have in the executive summary a short paragraph on each site summarizing the nature of the site, the anticipated reuse, and what COCs the Navy intends to address at the site. EPA recommends explaining at the beginning that even though the soil near the OWSs has not been characterized, the FS evaluates remedies to address contamination that may be found during the characterization of these areas.
2. Please remove the phrase "groundwater contaminant examination" from this document. This phrase appears synonymous with monitored natural attenuation, and the accepted "monitored natural attenuation" should be used instead. Regardless of what it is called, MNA still requires that certain conditions be met, i.e. lines of evidence be shown, before it can be selected as a remedial alternative.
3. The discussion regarding PAHs is often incorrectly presented in the document. PAHs in deep soil, i.e below 8 ft bgs, are attributed to the Marsh Crust which currently has an ordinance in place to restrict exposure to this layer of PAHs. PAHs in soil from 0 - 8 feet are attributed to dredged sediment used to create most of Alameda Point and there is no ordinance or other form of remedy in place to protect exposure to receptors from PAHs at these depths. Therefore, PAHs from 0 - 8 feet bgs at all sites need to be evaluated for potential risk. If the average exposure concentration across a site is 0.62 mg/kg BaP eq in the 0-8 foot range, and if no single sample point in the 0- 8 foot range is above 1.0 mg/kg, then the PAHs pass the screening criteria. If the average is above 0.62 mg/kg BaP eq. or if there is a hit above 1.0 mg/kg, then PAHs at the specific site need to be evaluated for risk and potential remedial action. Please correct to reflect this approach throughout the document.
4. EPA requests that the inhalation concentrations used for remediation goals be those presented by the State of California in their January 2005 document "Use of California Human Health Screening Levels in Evaluation of Contaminated Properties", specifically the information contained in Table 2. (see enclosure)
5. The FS uses a duration of 100 years for LUCs for soil alternatives; however, the basis for this period is unclear. The duration selected for comparative analysis of alternatives should be the time to achieve remedial goals. It is unclear if the Navy anticipates that soil contaminants will reach remedial goals in 100 years. An explanation should be provided whenever the period of analysis is less than the time to achieve remedial goals. Please revise the FS to clarify the basis for the 100-year duration of LUCs for soil remedies.

6. Appendix C includes costs for groundwater alternatives 3A, 3B, 4A, and 4B, but the text does not include these designations and only presents Alternative 3 and Alternative 4. Since the components of these subalternatives, the timeframes to achieve cleanup, and the costs are different, the alternatives should be presented separately in the text as Alternative 3A, Alternative 3B, Alternative 4A, and Alternative 4B and then evaluated separately. Please make this change.
7. EPA greatly appreciates the focused ARARs discussion in this FS.

#### **SPECIFIC COMMENTS**

1. **ES-1, Soil bullets:** Please note that Site 7 will include further characterization of the soil debris area in addition to remediation of the soil debris area.
2. **ES-1, Groundwater bullets:** Add two more bullets explaining that groundwater beneath the OWSs at Sites 7 and 8 will be sampled for VOCs, SVOCs, metals and pesticides. If the sampling results show groundwater contamination, remediation of groundwater will be evaluated.
3. **Page ES-3:** Site 16 RAOs need to be MCLs because the groundwater in this location is a potential and possibly current source of drinking water. MCLs will be ARARs regardless of the potential future reuse of the property in this location.
4. **ES-3, last paragraph:** Please explain why California MCLs were selected as remediation goals. In addition, please explain why vinyl chloride is not included with PCE and TCE as an inhalation threat, given its presence at Site 6 and 16. EPA requests that the inhalation concentrations used for remediation goals be those presented by the State of California in their January 2005 document "Use of California Human Health Screening Levels in Evaluation of Contaminated Properties", specifically the information contained in Table 2. (see enclosure)
5. **Executive Summary, Page ES-6:** In the Executive Summary, the durations of groundwater remedial alternatives are reported as 40 years, 30 years and up to 5 years for Alternatives 2, 3, and 4 respectively, to attain domestic use remedial goals; however, in the text of the FS and in the cost estimates, 30 years is used as the duration for Alternative 2. Furthermore, the Executive Summary concludes that the 30 and 5 year time-frames for Alternatives 3 and 4 are shorter than the time-frame for Alternative 2, but the time frame used for Alternative 2 in the body of the FS is the same as that for Alternative 3: 30 years. Please revise the FS to correct this discrepancy.
6. **Page 1-1, second paragraph:** It would be more accurate to say that the RI/FS work for Site 14 and 15 was put on a faster track than Sites 6, 7, 8 and 16. Site 15 has a completed RI and FS, but the Site 14 FS is not yet complete.

7. **Section 2.1, Installation History, Page 2-1:** The text in the first paragraph states that the first documented filling of the subtidal lands “began some time during the 1890s” but the text of the first full paragraph on page 2-2 and the text of the second bullet on page 2-3 indicate that this filling began in 1887. Please resolve this discrepancy and revise the text as necessary.
8. **Section 2.1, Installation History, Pages 2-1 and 2-2:** The installation history does not include the date Alameda Point was placed on the National Priorities List (NPL). Please include this date in the text.
9. **Section 2.3, Geology, Page 2-3:** The text of the first bullet indicates that the Marsh Crust layer “was formed by petroleum wastes,” but EPA comments on the OU-1 Remedial Investigation (RI) Report indicated that EPA would prefer that the text state that the Marsh Crust is associated with refinery and coal gasification wastes so that readers will not assume that the polynuclear aromatic hydrocarbon (PAH) problem is related to the total petroleum hydrocarbon (TPH) program rather than to CERCLA. Please revise the text to state that the Marsh Crust is associated with refinery and coal gasification wastes.
10. **Section 2.3.3, Site 8 Geology, Page 2-5:** The text does not include a description of the artificial fill between the surface and 6 feet below ground surface (ft bgs), but does include a description of the fill between 6 and 10 feet bgs. Please include a description of the artificial fill materials between the surface and 6 ft bgs at Site 8.
11. **Page 2-9, first paragraph:** The statements in this paragraph are incorrect. Groundwater beneath Sites 6 and 8 meets the federal definition of a Class II aquifer which means it is a potential drinking water source. However, due to the many factors described in the “Beneficial Uses of Groundwater” document for Alameda Point (Navy, 2000), the water is **unlikely** to be used as a drinking water source in the future which means that there is some flexibility in applying MCLs as ARARs for CERCLA cleanup purposes.
12. **Page 2-9, second paragraph:** Please note that the groundwater beneath Site 16 is correctly stated as being a Class II aquifer that is possibly a current drinking water source (due to the existence of close off-base wells). In this instance MCLs do apply as ARARs, regardless of future property use.
13. **Page 2-11, last bullet:** Please confirm that the stated reuses for Site 6, 8 and 16 are as stated in this bullet. EPA is under the impression that Site 16 is slated for residential and that Site 6 and 8 are also likely targeted for residential (or mixed use, which includes residential).
14. **Table 2-1, Site History, Planned Reuse, and Beneficial Groundwater Uses:** This table indicates that the potential future land reuse for Site 6 is recreational and commercial/industrial, and for Site 16 it is recreational. However, both Site 6 and 16 are shown in areas identified as “housing opportunities” on Figure 2-6, Planned Reuse Areas. Please clarify if residential use is possible in the future at Site 6 and 16 and add residential use to Table 2-1 as appropriate.

15. **Section 3.0, Remedial Investigation Summary and Recommendations:** It appears that the words "contaminant" and "contaminate" have been used interchangeably. For example, "contaminate" was used where "contaminant" should have been used in the second to the last sentence in Section 3.2, and in the last paragraph of the subsection titled "Soil" on page 3-7. Please revise the text to use the correct terminology.
16. **Page 3-2, sentence that reads "For metals, screening levels were based on the maximum concentration detected in ambient soil or groundwater."** EPA strongly disagrees with this method of screening and asks that the Navy perform a comparison of the distribution of each metal contaminant in the background data set with the distribution of each contaminant in the site data set. The distributions for each data set should be close in value in order to claim that a site metal concentration level is due to background. In addition, outlier tests should be performed on the site data to ensure that potential hot spots are not being overlooked by "averaging" them in with the rest of the data.
17. **Page 3-2, second paragraph:** Please note that the regulatory agencies did not agree with the risk assessment results for the RI and believe that the risk is probably underestimated at each site.
18. **Page 3-3, Section 3.1.2, second paragraph:** Even though the groundwater beneath Site 7 is a Class III aquifer according to federal guidelines and therefore not subject to MCLs as ARARs, protection of this groundwater may be required under Regional Board regulations. Further, it is incorrect to state that there is no contamination in groundwater beneath Site 7. Arsenic levels are an order of magnitude above the background level, and therefore appear attributable to site activities. In addition, arsenic is a COC in the soil, further indication that the groundwater contamination is due to site activities. EPA requests that the Navy acknowledge that arsenic is a contaminant above background range in groundwater at Site 7 and correct all references in the FS document that state otherwise. Further, TPH is a problem at Site 7 and that fact, even though outside of the CERCLA cleanup, should be mentioned.
19. **Page 3-3, Residential Scenario:** Ingestion of homegrown produce should be included as an exposure pathway for the residential scenario to be consistent with evaluation of other sites on the base.
20. **Page 3-4, first paragraph:** A brief discussion of the limitations of the data set used in the risk assessment would be helpful either here or in the beginning of the risk assessment portions. The useability of the data was limited by many of the sample analyses having detection limits set above the PRGs, in some cases substantially above the PRGs. This problem means that the data set falls short of doing an adequate job characterizing the sites and results in data gaps which the Navy has agreed to investigate as part of the RD/RA. It also explains why the regulators believe the risks may be underestimated.

21. **Page 3-4, Section 3.1.3:** Please explain why storm sewer lines and associated bedding material were not considered preferential pathways for contaminants in groundwater to the Seaplane Lagoon and the Bay, or alternatively, rephrase this section to state that the clean up of groundwater will eliminate any concerns regarding potential migration of contaminated groundwater to an aquatic receptor.
22. **Page 3-5, Section 3.1.4, last sentence:** Please clarify this sentence to explain that the only site with a comingled TPH and CERCLA plume is Site 16, and the plumes will be handled under the CERCLA cleanup.
23. **Section 3.1.5, Approach to Risk Management Decisions, Page 3-5:** Sites are evaluated in this FS if the total site risk is greater than  $1E-06$  or the Hazard Index (HI) is greater than 1, but lead does not appear to fit either of these categories. Please revise this section to clarify the approach to risk management decisions for lead contamination at OU 1 sites.
24. **Page 3-8, second paragraph:** Please confirm that the detection limits for Bis(2-chloroethyl)ether in all 35 samples were below the PRGs, or if this is not the case, the sentence should be qualified to explain why this contaminant is not a concern.
25. **Page 3-8, third paragraph:** Please clarify what is meant by the phrase "do not appear to be migrating off site...". Does this refer to Site 6 or to Alameda Point?
26. **Page 3-10, Section 3.2.2.2:** The potential for bedding material around the storm sewer lines to act as a preferential pathway should be evaluated here, or alternatively, an explanation given that groundwater will be remediated to levels that no longer pose a threat to aquatic receptors even if the bedding material presents a preferential pathway out to the Bay.
27. **Section 3.2.2.2, Ecological Risk Assessment Results, Page 3-10 and Section 3.2.3, Risk Management Decisions, Page 3-10:** The text in these two sections contains a contradiction. In Section 3.2.2.2, the text states that "the ERA results indicated that none of the chemicals in soil or groundwater pose significant risk to ecological receptors," but the text in Section 3.2.3 states that, "No action is recommended for chemicals that pose a risk only to ecological receptors," which implies that there are chemicals that pose a risk to ecological receptors. Please resolve this discrepancy.
28. **Page 3-10, Section 3.2.3, PAHs:** Here and in other sections, the discussion regarding PAHs is incorrectly presented. PAHs in deep soil, i.e below 8 ft bgs, are attributed to the Marsh Crust which currently has an ordinance in place to restrict exposure to this layer of PAHs. PAHs in soil from 0 - 8 feet are attributed to dredged sediment used to create most of Alameda Point and there is no ordinance or other form of remedy in place to protect exposure to receptors from PAHs at these depths. Therefore, PAHs from 0 - 8 feet bgs at all sites need to be evaluated for potential risk. If the average exposure concentration across a site is 0.62 mg/kg BaP eq in the 0-8 foot range, and if no single sample point in the 0- 8 foot range is above 1.0 mg/kg, then the PAHs pass the screening

criteria. If the average is above 0.62 mg/kg BaP eq. or if there is a hit above 1.0 mg/kg, then PAHs at the specific site need to be evaluated for remedial action. Please correct to reflect this approach throughout the document.

29. **Page 3-12, third paragraph:** Please be clear that soil AND groundwater samples will be taken around and beneath the OWS at each site. The OWSs represent not only soil data gaps but also groundwater data gaps.
30. **Page 3-12, sixth paragraph:** EPA does not agree with attributing metal contaminant concentrations in groundwater above background to other factors (in this case the presence of solvents) as a reason to discount the metal as a COPC. Since the presence of solvents is due to site related activities, it can be argued that the elevated manganese is also due to site related activities and therefore needs to be evaluated for risk and possible remediation. Please revise and address this potential risk.
31. **Page 3-14, third paragraph:** Please provide the range of concentrations of PAH hits and also the maximum hit concentration, as is done for other contaminants.
32. **Page 3-15, first paragraph, last sentence:** This statement raises the concern that the source of the VOCs may not yet have been identified.
33. **Section 3.3.1, Groundwater, Page 3-15:** The second paragraph of this subsection appears to be out of place since it includes a discussion of risk from soil. Please move this paragraph to one of the subsections on risk.
34. **Page 3-15, third paragraph, last sentence:** It is premature to state that the PAH plume has been defined since there has only been one round of sampling that has included PAHs at Site 7. It is not possible to know yet whether the plume has been defined or whether PAHs are really a problem here.
35. **Section 3.3.2, Risk Assessment Results, Page 3-16:** There are several discrepancies between the information presented in this section and the data listed in the table on Page 3-18. For example, for subsurface soil in the non soil debris area, the total RME carcinogenic risk is given as 2E-04 but the sum of residential cancer risk values in the table appears to be 3E-04. Similarly, the HI is given as 4, but the numbers in the table add to 5.44. Benzene is listed as a risk driver, but the contribution from benzene is not listed in the table. Furthermore, since the table includes only those chemicals exceeding screening levels, it appears that the total RME carcinogenic risk should be higher than 3E-04 and the total HI should be higher than 5.44. Please revise this section to correct these discrepancies.
36. **Page 3-16, fourth paragraph, last sentence:** What is the risk driver in subsurface soils that is resulting in a risk level of  $2 \times 10^{-4}$  and that would seem to imply that remediation is necessary.

37. **Page 3-17, second and third paragraph:** EPA reiterates our opinion stated in our comments on the Remedial Investigation Report that we do not accept that the explanation given in the text here that levels of arsenic found in the groundwater are at background levels. The incremental risk level is, in fact, an order of magnitude higher, as stated in the third paragraph, and therefore arsenic levels do not seem attributable to background. In addition, arsenic is a risk driver in the soil, which further supports the speculation that its presence in groundwater is due not to background, but to site related activities. Even though the water beneath Site 7 is considered a Class III aquifer under federal guidelines, it still falls under the area covered in the Regional Board's Basin Plan as warranting protection. Therefore, it is likely that remediation of the groundwater for arsenic and possibly PAHs will be necessary. Please acknowledge the presence of arsenic at Site 7 may be due to site related activities, and include a remediation component for this contaminant that will meet the Regional Board's requirements.
38. **Section 3.3.2, Lead, Page 3-17:** Text appears to be missing from the sentence that reads, "The model predicts that the 95<sup>th</sup> percentile estimate of blood lead is 24.6 micrograms per deciliter (ug/dL) for a child ingesting groundwater and the soil debris area." Please provide the missing text.
39. **Table, Chemicals Exceeding Screening Levels at Site 7, Page 3-18:** Lead is listed as a COC in the soil debris area, but the criterion for lead is not provided. For clarity, please list the exposure point concentration and the lead screening criterion in this table.
40. **Section 3.3.2.2, Site 7 Soil Debris Area, Pages 3-19 and 3-20:** The fact that the extent of contamination in the Soil Debris Area has not been delineated is not discussed in this section. The extent of aluminum, arsenic, copper, and lead, has not been delineated, so it is unclear whether the risk associated with these areas has been defined. Therefore, the conclusion that "risk is within the risk management range" is premature. Please revise the text to state that the extent of contamination in the Soil Debris Area has not been delineated and that this will be addressed in the RD/RA. In addition, please recommend further action to delineate the extent of contamination.
41. **Section 3.3, Risk Management Decisions, Page 3-20:** The first sentence in this section states that for the residential scenario, carcinogenic risk from Site 7 soil is within the risk management range; however, on Page 3-16 the FS gives the total RME carcinogenic risk as which exceeds the risk management range. Please correct this discrepancy. Also, cadmium is accepted as a COC for Site 7 soil and exceeds the HI of 1, but is not discussed in this section. Please revise this section to provide further justification for eliminating Site 7 soil from consideration in this FS.
42. **Page 3-20, fourth paragraph:** The Marsh Crust does not address PAH contamination found at 4 to 8 feet bgs and PAH contamination found at this depth interval is due to PAHs from sediment used to fill Alameda Point rather than trapped PAH contamination in the marshes and sloughs. A remedy to control exposure to any PAHs above the RAOs of 0.62 mg/kg BaP eq average concentration and any single point over 1.0 mg/kg BaP eq. must be evaluated at this site.

43. **Page 3-20, sixth paragraph:** The logic for disregarding risks from PAHs in soil is wrong. The PAHs between 0 and 8 feet bgs are NOT attributed to the Marsh Crust and the Marsh Crust ordinance does not address them. Also, cadmium is listed as a COC for this soil area on page 3-18, but seems to have been dropped from discussion from this section. Please explain what happened to the cadmium hits.
44. **Section 3.3, Risk Management Decisions, Page 3-21:** This section presents a justification for not considering Site 7 groundwater in this FS by discussing each COC; however, lead apparently exceeds the screening criterion but is not discussed in this section. Further, methyl tert butyl ether (MTBE) was detected in groundwater east of Site 7, but this chemical was not included in the HHRA. For clarify and completeness, please revise this section to discuss why lead and MTBE in groundwater are not a concern at Site 7.
45. **Page 3-21, Groundwater Section:** EPA disagrees with the logic for removing arsenic and PAHs from being risks in groundwater at this site. Arsenic is an order of magnitude higher than background and PAHs are probably due to elevated levels of PAHs in soil.
46. **Section 3.4.1, Groundwater, Page 3-23:** Although the text states that “there are no detectable concentrations of TCE,” it is possible that trichloroethene (TCE) is present in Site 8 groundwater, since the well in which TCE was detected has not been sampled since quarterly monitoring began in 2002. Since the well that historically had TCE has not been sampled, it is not known if TCE is still present in Site 8 groundwater. Similarly, the same well (M08-06) had the highest concentrations of benzene; since this well has not been sampled recently, the current maximum concentration of benzene is unknown. Please revise the text to state that it is not known if TCE or benzene is present in Site 8 groundwater and also state that groundwater samples will be taken beneath the OWSs to ascertain if they are the source of the past hit of TCE.
47. **Chemicals Exceeding Screening Levels at Site 8:** Lead is listed as a COC in soil, but the criterion for lead is not provided. For clarity, please list the exposure point concentration and the lead screening criterion in this table.
48. **Section 3.4.3, Risk Management Decisions, Page 3-26:** The second sentence at the top of this page states that no further action is recommended at Site 8. Please clarify this statement (e.g., no further action is recommended for TPH at Site 8).
49. **Page 3-26, Site 8 Soil Section:** The Marsh Crust does not address PAH contamination found from 0 to 8 feet bgs and PAH contamination found at this depth interval is due to PAHs from sediment used to fill Alameda Point rather than trapped PAH contamination in the marshes and sloughs. A remedy to control exposure to any PAHs above the RAOs of 0.62 mg/kg BaP eq average concentration and any single point over 1.0 mg/kg BaP eq. needs to be evaluated at this site.

50. **Page 3-27, Site 8 Groundwater:** Note that groundwater sampling beneath the OWS needs to be performed as part of the RD/RA data gap sampling. Based on those results, a determination can be made whether the groundwater at this site needs further investigation or remediation, or whether no action is appropriate.
51. **Page 3-28, 3-29, Groundwater Section:** Note that chlordane was found at very high concentrations in soil near UST 608-1 and may show a source for the chlordane hits in groundwater. It is possible that the contamination has migrated away from the source over the last 10 years and may still be present in the groundwater.
52. **Section 3.5.1, Nature and Extent, Pages 3-28 and 3-29:** Some text is in the wrong subsections. For example, the second paragraph (under Soil) on Page 3-28 discusses the extent of contamination in groundwater and should be moved to the groundwater subsection. The fourth paragraph (under Soil) discusses risk from soil and groundwater and should be moved to Section 3.5.2. The first two sentences of the last paragraph of the groundwater subsection (page 3-29) discuss the risk associated with lead, but the remainder of the paragraph discusses the pilot study for in situ chemical oxidation, so it appears that the first two sentences should be moved to Section 3.5.2. Please reorganize the text in this section so that the Soil subsection only contains information about the extent of soil contamination and the groundwater subsection only contains information about the extent of groundwater contamination.
53. **Section 3.5.2.1, Human Health Risk Assessment, Page 3-30:** The discussion of groundwater risk states that risk from background groundwater is  $2.2\text{E-}04$ , but the next sentence says that incremental risk from "background" metals is  $4.6\text{E-}04$ . This appears to be in error, since the risk from background groundwater cited in the RI Report is lower. Please clarify if the incremental risk, less the risk from background metals is  $4.6\text{E-}04$  and if not, revise the text to cite the correct incremental risk.
54. **Section 3.5.3, Risk Management Decisions, Page 3-31:** This section states that COCs identified for soil are lead and PCBs; however, lead is not listed as a soil COC in the table on Page 3-32 and the text of Section 3.5.2.1 states that there is a minimal risk to human health from ingestion of lead in Site 16 soil. Please resolve this discrepancy.
55. **Page 3-32, last paragraph:** Storm sewer bedding material may still provide a preferential pathway for contaminated groundwater to flow to the Bay, even in areas where the storm sewers are in good condition. If groundwater is remediated to MCLs, any ecological concern regarding aquatic receptors will be addressed and the bedding migration pathway will no longer be a concern.
56. **Page 4-1, first paragraph:** Please mention that not only will soil samples be taken beneath and adjacent to the OWSs at the sites, but that groundwater will also be sampled beneath the OWSs.

57. **Page 5-1, Soil Section:** Please note that soil samples need to be taken beneath the OWSs as well as adjacent to them. The final sampling locations can be decided in the Remedial Design Workplan.
58. **Section 5.1.3.1, Chemical, Page 5-5:** The discussion of groundwater ARARs refers to Site 16; however, this section discusses Site 6 ARARs. For clarity, please remove the reference to Site 16 from this section. Please note that Site 6 groundwater qualifies as a potential, although unlikely drinking water source. EPA will not require that MCLs be used as ARARs if there is a prohibition use of the groundwater and on residential use of the property. However, Site 6 groundwater does fall under the area delineated by the Regional Board as requiring protection, and therefore any Regional Board requirements for clean up must be addressed by the remedial action chosen for this site.
59. **Page 5-7, Table at the top of the page:** The inhalation criteria for restricted use for vinyl chloride have been entered incorrectly in this table. When revising the table, EPA requests that the Navy use the CalEPA's January 2005 guidance "Use of California Human Health Screening Levels in Evaluation of Contaminated Property" to derive the corresponding groundwater concentrations for the contaminants of concern.
60. **Page 5-10, Section 5.2.2.2, second paragraph:** While LUCs may be necessary during the time it takes for a remedy to meet the RAOs, EPA does not agree with the statement that "attainment of the vapor intrusion goal may not be possible, verifiable or practical." EPA expects that this goal will be met by the remedy that is chosen.
61. **Page 5-11, second paragraph:** The statement "The effectiveness of the groundwater use restrictions depends on the willingness and ability of local governments to monitor compliance and take enforcement action" is disturbing. Firstly, the Navy, at least in part, is responsible for ensuring that restrictions as part of LUCs are enforced. Second, we have evidence to show that groundwater restrictions in the City of Alameda are not strictly monitored or enforced, which means that further layers of restrictions will be necessary to ensure that the LUCs work, i.e. prohibition on residential use in areas where groundwater use is prohibited.
62. **Page 5-15, Oxygen Releasing Compounds:** Is it worth evaluating use of oxygen releasing compounds in tandem with other technologies? Reducing vinyl chloride is often the most difficult part of the remedy process and oxygen releasing compounds are known to be effective in this regard.
63. **Page 5-15:** Please remove the phrase "groundwater contaminant examination" from this document. This phrase appears synonymous with monitored natural attenuation, and the accepted "monitored natural attenuation" should be used instead. Regardless of what it is called, MNA still requires that certain conditions be met, i.e. lines of evidence shown, before it can be selected as a remedial alternative.

64. **Section 5.3.2.4, Alternative 4 - Plume boundary Delineation, Active Groundwater Treatment to Unrestricted Reuse Criteria, Groundwater Contaminant Examination, and LUCs, Page 5-22:** Under this alternative, groundwater contaminant examination would be conducted for a period of 30 years after active groundwater treatment to MCLs. It is not clear why groundwater contaminant examination for 30 years would be required if MCLs are achieved within 3 to 5 years. Please revise the FS to include a reasonable timeframe for monitoring to confirm that MCLs have been attained and provide justification for the monitoring period included in Alternative 4.
65. **Page 5.23, second paragraph:** Confirmation of decrease in residual contamination due to remedial actions is simply monitoring, and is a required component of any groundwater remedy. Please revise the text to reflect this fact.
66. **Section 5.4.2.1, Overall Protection of Human Health and the Environment, Page 5-24 and Section 8.4.2.1, Overall Protection of Human Health and the Environment, Page 8-2 :** The first sentence in Section 5.4.2.1 states that Alternative 2 “protects human health by identifying the nature and extent of contamination present in soil at OWS-040A and OWS-040B ...” but delineation of the nature and extent of contamination is not protective of human health because it does nothing to break the exposure pathway or to reduce the toxicity, mobility, or volume of contaminants. The same problem occurs in Section 8.4.2.1., where the text states that Alternative 2 protects human health by identifying the nature and extent of contamination present in soil at OWS-608A and OWS-608B ...” Please revise the quoted phrase from these sections and from any other section (e.g., 8.4.3.1, for Alternative 3) in which “identifying the nature and extent of contamination” is said to be protective.
67. **Section 5.4.2.2, Compliance with Applicable or Relevant and Appropriate Requirements, Page 5-25:** Under “Potential Action” the Navy lists action-specific ARARs for excavation and off-site disposal; however, this section addresses Alternative 2: One Time Soil Sampling and LUCs. Please revise the FS to provide the list of ARARs applicable to Alternative 2 in this section.
68. **Section 5.4.3.4, Reduction of Toxicity, Mobility, or Volume through Treatment, Page 5-29:** This section states that Alternative 3 would reduce the toxicity, mobility, or volume of potentially contaminated soil adjacent to OWS-040A and OWS-040B by excavating and disposing of contaminated materials at an off-site facility. According to the National Contingency Plan, this criterion is intended to evaluate alternatives with respect to reduction of toxicity, mobility, or volume *through treatment*. Disposal at an offsite facility does not meet this criterion unless treatment is conducted at the facility, in which case the volume may actually increase depending on treatment method. Please revise this section to clarify that Alternative 3 would not reduce the toxicity, mobility or volume through treatment unless treatment is conducted at the off-site facility.
69. **Section 5.5.2.2, Reduction in Toxicity, Mobility, and Volume, Page 5-31:** This criterion is intended to evaluate alternatives with respect reduction of toxicity, mobility, or volume *through treatment*. Since Alternative 2 includes no treatment, please delete

the statement that it “does reduce the toxicity of contaminated soil, although not through treatment....”

70. **Section 5.6.1.2, Compliance with Applicable or Relevant and Appropriate Requirements, Page 5-32 and Section 8.6.1.2, Compliance with Applicable or Relevant and Appropriate Requirements, Page 8-30:** The text states that Alternative 1 “will eventually meet chemical-specific ARARs,” but since there is no treatment and no mechanism to measure a reduction in contaminant concentrations in Alternative 1, this assumption cannot be made. Please delete the quoted statement.
71. **Section 5.6.3.7, Cost, Page 5-38:** The cost for hydrogen release compound under Alternative 3 is given as \$1.7 million, but in Appendix C, the cost is \$1.4 million. Please resolve this discrepancy.
72. **Page 5-38, Section 5.6.4.3:** EPA believes the long term effectiveness and permanence would be greater for Alternative 4 than Alternative 3 because there would be no long term LUCs to be kept in place.
73. **Page 5-39, Section 5.6.4.4:** Reduction of mobility, toxicity and volume would all be greater with Alternative 4 than Alternative 3.
74. **Section 5.7.1.1, Overall Protection of Human Health and the Environment, Page 5-40:** The second paragraph appears to discuss Alternatives 2 through 4, but only the specific elements of Alternative 2 are discussed. Please revise this section to clarify how Alternatives 3 and 4 compare in achieving this criterion.
75. **Section 5.7.1.2, Compliance with Applicable or Relevant and Appropriate Requirements, Page 5-40, and Table 5-8: Summary of Comparative Analysis of Groundwater Alternatives For Site 6:** The text states that “all alternatives are expected to meet the chemical-specific, location-specific, and action-specific ARARs identified in this FS report” and Table 5-8 indicates that Alternative 1 will meet ARARs, but since Alternative 1 does not include treatment or mechanism to measure a reduction in contaminant concentrations it cannot be assumed that Alternative 1 will meet ARARs. Further, the fact that Alternative 1 will not provide long-term-effectiveness and permanence at Site 6 is acknowledged in Section 5.7.2.1. Please revise the text to state that Alternative 1 will not meet ARARs.
76. **Section 5.7.2.2, Reduction of Mobility, Toxicity, or Volume through Treatment, Page 5-41:** The text states that all of the alternatives “would eventually reduce the mobility, toxicity and volume of contamination through natural degradation processes, but there is no mechanism to measure any reduction in Alternative 1, so this assumption cannot be made. Please revise the text to state that Alternative 1 will not reduce the mobility, toxicity, and volume of contamination.

77. **Page 5-42, Section 5.7.3, third paragraph:** Alternatives 3 and 4 provide protection against indoor vapor intrusion through treatment which is more effective and permanent than Alternative 2 LUCs.
78. **Figure 5-1, Proposed Excavation Areas for Site 6 Soil and OWS-040A and OWS-040B:** It is not clear how the excavation areas for the OWSs were estimated. Please clarify the basis for the assumed excavation areas (e.g., previous sampling locations, experience removing similar size OWSs, etc.).
79. **Page 6-1, first paragraph:** While EPA agrees that the high TDS in groundwater beneath Site 7 disqualifies it for protection as a Class II potential drinking water source, the area still falls under the protection of the Regional Board. Any RB requirements for protection of the groundwater must be met at this site, notwithstanding the federal designation of the groundwater.
80. **Section 6.1.1, Chemicals of Concern, Page 6-1:** The text states that arsenic, cadmium, and lead are the only COCs in Site 7 soil, but the extent of aluminum and copper contamination in the Soil Debris Area has not been delineated so it is unclear if these metals should also be considered COCs. Please revise the text to state that the extent of aluminum and copper has not been delineated so it is not known if these metals should also be considered COCs.
81. **Page 6-1, last sentence:** EPA requests that the Navy perform a comparison of the distribution of each metal contaminant in the background data set with the distribution of each contaminant in the site data set rather than a comparison to maximum background concentration levels. The average value for arsenic at Alameda is around 8 – 9 mg/kg and so screening against a value of 15.6 mg/kg is not sufficiently conservative. The distributions for each data set should be close in value in order to claim that a site metal concentration level is due to background. In addition, outlier tests should be performed on the site data to ensure that potential hot spots are not being overlooked by “averaging” them in with the rest of the data.
82. **Page 6-2, third paragraph:** Please note that groundwater samples must be taken beneath the OWS in addition to the soil samples beneath and adjacent to it.
83. **Section 6.2, General Response Actions and Remedial Alternatives, Page 6-5:** This section states that three general response actions (GRAs) were identified for the contaminated soils at Site 7; however, only two GRAs are listed and evaluated: no action and excavation. Since the no action alternative is only retained for comparison purposes, effectively only one alternative is developed for Site 7 soil. This is insufficient. In order to ensure that the best possible alternative is developed for Site 7 soil, please revise the FS to include additional alternatives for Site 7 soil. If other alternatives do not meet the threshold criteria, they can be eliminated during the screening of alternatives.

84. **Section 6.2.2, Alternative 2: One-Time Soil Sampling, Excavation, and Off-site Disposal, Page 6-6 and Figure 6-1:** It is unclear how the extent of the excavation can be shown with any accuracy since the extent of aluminum, arsenic, cadmium, copper, and lead has not been delineated in the Soil Debris Area and sampling to determine the extent of contamination is apparently not included in this alternative. It is possible that contamination extends beyond the boundaries shown on Figure 6-1. For example, the concentration of lead in the 4.0 to 4.5 foot interval below ground surface (bgs) at S07-SSI-SS13 is 2,550 milligrams per kilogram (mg/kg) and cadmium was detected at 125 mg/kg, but here are no locations to the southwest, south, or southeast to delineate the extent of this contamination. In the 2.0 to 3.0 foot bgs interval of the next sample to the west (S07-SSI-SS14), lead was detected at 1,200 mg/kg and cadmium was detected at 44.2 mg/kg, but there are no locations to the southwest, south, or southeast to delineate the extent of this contamination. Please revise this alternative to include sampling to delineate the extent of contamination in the Soil Debris Area.
85. **Page 7-1, first paragraph:** Groundwater beneath Site 8 does qualify as a potential drinking water source under federal criteria. However, it is an unlikely, although still potential, drinking water source. Due to the reasons given in the Beneficial Uses of Groundwater document, EPA will not require that MCLs apply as ARARs provided there is a prohibition on groundwater use at this site and a prohibition on use of the site as residential property. However, the Regional Board does require that groundwater beneath Site 8 be protected, and so all State requirements pertaining to the protection of this resource must be addressed.
86. **Section 7.1.1, Chemicals of Concern, Page 7-1 and Figure 7-1, Proposed Excavation Areas, Site 8 Soil:** The FS states that Aroclor-1260 was detected along the storm sewer line at Site 8 at concentrations slightly above residential PRGs, but Figure 7-1 shows Aroclor concentrations along the sewer line on the order of 270 mg/kg, which is more than 1000 times the PRG. A comparison of this figure with the information presented in the RI, suggests that the units on Figure 7-1 are in error. Please revise Figure 7-1 to present data in the appropriate units.
87. **Page 7-5, Section 7.2.2, first paragraph:** Please explain why the prohibition on residential use is in effect for 100 years and not indefinitely. Also, please state that if groundwater contamination is found beneath the OWS, remediation of the groundwater may be necessary.
88. **Section 7.5.4, Reduction of Toxicity, Mobility, or Volume, Page 7-12:** This section states that Alternative 3 would reduce the toxicity, mobility, or volume contaminated soil at Site 8 by excavating and disposing of contaminated materials at an off-site facility. According to the National Contingency Plan, this criterion is intended to evaluate alternatives with respect to reduction of toxicity, mobility, or volume *through treatment*. Disposal at an offsite facility does not meet this criterion unless treatment is conducted at the facility, in which case the volume may actually increase depending on treatment method. Please revise this section to clarify that Alternative 3 would not reduce the

toxicity, mobility or volume through treatment unless treatment is conducted at the off-site facility.

89. **Section 7.6.2.2, Reduction in Toxicity, Mobility, and Volume, Page 7-14:** This criterion is intended to evaluate alternatives with respect reduction of toxicity, mobility, or volume *through treatment*. Since Alternative 2 includes no treatment, please delete the statement that it “does reduce the toxicity of contaminated soil, although not through treatment ....”
90. **Page 8-2, Section 8.1.1, Soil:** The first sentence states that arsenic, lead and PCBs will not be evaluated further in this FS. However, the previous page states data gaps for PCBs will be addressed, per BCT agreement, as part of the RD activities. Please clarify Section 8.1.1.
91. **Page 8-4, first paragraph:** Please include additional PCB sampling with that being proposed for the OWSs.
92. **Page 8-4, Section 8.1.4, Groundwater RAOs:** Since the groundwater beneath Site 16 is a potential and possibly current drinking water source, and the likelihood of groundwater use is high, the only RAOs that can be used for groundwater clean up are MCLs. Please revise this section by removing the non-MCL RAO options, since they would not comply with ARARs.
93. **Page 8-5, first bullet on page:** Please add “and any PCB contaminated soil in the storage area” to the sentence.
94. **Section 8.2.2.4, Active Remediation, Page 8-10:** Air sparging is listed as one of the technologies evaluated, but it is not discussed in this section. For clarity and completeness, please include a discussion of air sparging in the screening of technologies for Site 16.
95. **Page 8-12, Groundwater Contaminant Examinations:** This term appears to be Monitored Natural Attenuation. Please be aware that the requirements for MNA specifically state that, among other things, the plume must be stable in order to consider MNA as a remedy. Therefore, in a situation where “the plume is still expanding and migrating”, MNA would immediately fail as one of the alternatives under consideration.
96. **Page 8-13, Section 8.2.3, second paragraph:** The activity described in this paragraph is actually monitoring, not MNA, and is not a stand alone remedy, but a component of every active groundwater remedy.
97. **8.4.2.4, Reduction of Toxicity, Mobility, or Volume through Treatment, Page 8-27:** This section states that Alternative 3 would reduce the toxicity, mobility, or volume of potentially contaminated soil adjacent to OWS-608A and OWS-608B by excavating and disposing of contaminated materials at an off-site facility. According to the National Contingency Plan, this criterion is intended to evaluate alternatives with respect to

reduction of toxicity, mobility, or volume *through treatment*. Disposal at an offsite facility does not meet this criterion unless treatment is conducted at the facility, in which case the volume may actually increase depending on treatment method. Please revise this section to clarify that Alternative 3 would not reduce the toxicity, mobility or volume through treatment unless treatment is conducted at the off-site facility.

98. **Page 8-32, Page 8.6.2.2:** EPA disagrees that Alternative 2 would eventually meet RAOs in the absence of any active remedial implementation. Rather, all evidence to date shows that PCE and TCE would eventually degrade to vinyl chloride and stall at that state unless aquifer conditions were changed through active remediation.
99. **Page 8-37, Sections 8.6.4.5:** The Short-term Effectiveness is much better for Alternative 4 which takes 1/7 of the time to reach RAOs as that for Alternative 3.
100. **Page 8-38, Section 8.7.1:** There would need to be a prohibition on residential use of the property for Alternatives 2 and 3, and a prohibition on residential use until MCLs are met under Alternative 4.
101. **Section 8.7.1.2, Compliance with Applicable or Relevant and Appropriate Requirements, Page 8-38, and Table 8-8: Summary of Comparative Analysis of Groundwater Alternatives For Site 16:** The text states that “all alternatives are expected to meet the chemical-specific, location-specific, and action-specific ARARs identified in this FS report” and Table 8-8 indicates that Alternative 1 will meet ARARs, but since Alternative 1 does not include treatment or mechanism to measure a reduction in contaminant concentrations it cannot be assumed that Alternative 1 will meet ARARs. Further, the fact that Alternative 1 will not provide long-term-effectiveness and permanence at Site 16 is acknowledged in Section 8.7.3. Please revise the text to state that Alternative 1 will not meet ARARs.
102. **Page 8-38, Section 8.7.3, second paragraph:** Alternative 2 would also require a prohibition on residential use of the property.
103. **Page 8-40, first paragraph, last sentence:** EPA does not agree with the 37 year timeframe for Alternative 2 to reach domestic use remediation goals. It would be extremely difficult to remove the vinyl chloride in groundwater without any active remediation.
104. **Page 8-40, fifth paragraph:** Please revise this paragraph. There are many domestic wells located in neighboring residences within a ¼ mile of this site and it is downplaying a potential exposure pathway to say that use of the groundwater beneath Site 16 is “highly unlikely”. It is also possible that use of the off-base wells could draw contamination from Site 16 across the base boundary and into these home wells. Regardless, the water qualifies as a potential, possibly current, drinking water source, both under federal and State criteria and MCLs need to be used as the RAOs to comply with ARARs.

105. **Appendix A, Section 3.2, Trichloroethene, Pages A-4 and A-5:** The last sentence of the first paragraph in this section and the first full sentence on page A-5 appear to be incomplete. Please review and revise these sentences to clarify their meaning.
106. **Appendix C, Section 6.1.2.2, Assumptions for Technology Screen at Site 6, Page C-10:** The second bullet on this page addresses follow-up treatment, but gives the duration and sampling requirements for primary treatment. Please revise this bullet to provide the duration and sampling requirements for follow-up treatment.
107. **Appendix C, Section 6.1.3.3, Alternative 4: Plume Boundary Delineation, Active Groundwater Treatment to Unrestricted Reuse Criteria, Groundwater Contaminant Examination, and LUCs, Page C-15:** This section addresses remediation to unrestricted reuse criteria, but the first bullet under "Active Groundwater Treatment (ISCO or HRC) discusses assumptions for the commercial/industrial reuse levels. Please revise the FS to make sure the assumptions for the unrestricted reuse criteria are listed in this section and incorporated into the cost estimates.
108. **Appendix C, Section 6.4.2.2, Assumptions for Technology Screen at Site 16, Page C-27:** The third bullet in this section indicates that effluent water will be discharged to the storm sewer. Please clarify if this is correct, or if discharge to the sanitary sewer is intended.
109. **Appendix C, Section 6.4.2.2, Assumptions for Technology Screen at Site 16, Page C-28:** Under Site 16-Modified Fenton's Reagent, the fourth bullet discusses follow-up treatment, but the same paragraph presents assumptions for primary treatment rather than for follow-up treatment. Please revise this bullet to clarify the assumptions for follow-up treatment.
110. **Appendix C, Section 6.4.2.5, Alternative 4: Plume Boundary Delineation, Active Groundwater Treatment to Unrestricted Reuse Criteria, Groundwater Contaminant Examination, and LUCs, Page C-33:** The first bullet under Active Groundwater Treatment (ISCO or HRC) addresses treatment to commercial/industrial reuse levels; however, this section applies to unrestricted reuse criteria. Please revise this section to make sure the assumptions for the unrestricted reuse criteria are listed and incorporated into the cost estimates.
111. **Appendix C, Remedial Action Alternative Cost Summary Sheets, Table C-2D:** The present value analysis includes a 34 year time frame for annual O&M costs; however, the annual O&M costs include LUCs. The LUCs under the unrestricted reuse scenario were assumed to apply only during the active remediation, or 4 years. Please revise the present value analysis to use the appropriate duration for LUCs.
112. **Appendix C, Remedial Action Alternative Cost Summary Sheets, Table C-2E:** The present value analysis includes a 35 year time frame for annual O&M costs; however, the annual O&M costs include LUCs. The LUCs under the unrestricted reuse scenario were

assumed to apply only during the active remediation, or 5 years. Please revise the present value analysis to use the appropriate duration for LUCs.

113. **Appendix C, Remedial Action Alternative Cost Summary Sheets, Table C-4B:** The cost summary does not appear to include sampling and disposal of decontamination wastewater. Please revise the cost estimates to include this cost as appropriate.
114. **Appendix C, Remedial Action Alternative Cost Summary Sheets, Table C-6A:** Under land use controls the total should be \$3,718 rather than \$1,239. Please correct this total and revise the corresponding present value annual O&M cost as appropriate.

#### **EPA ORC Comments:**

#### **GENERAL COMMENTS**

1. **Need for multiple copies.** For future documents of this type, EPA requests that the Navy provide three copies of the document to EPA.
2. **Groundwater classification and ARARs.** The discussion of groundwater for the various sites is insufficient. There needs to be more discussion either in the individual FS chapters or on p. 2-9. Additionally, EPA disagrees with some of the Navy's conclusions. We recognize that EPA's position on GW at Alameda may appear to have evolved as we have considered individual sites more in depth. Our analysis of the GW at OU1 can be summarized as follows:

Given the quality of the water at Site 16, all parties have agreed that it should be considered potential DW. Therefore, MCLs must be selected as ARARs. This is necessary for protection of the resource, regardless of the potential reuse of the site.

At Sites 6 and 8, although actual use of this water for domestic consumption may be unlikely, MCLs are generally considered to be ARARs for Class II water. In determining whether MCLs are relevant and appropriate for sites such as these, the Navy and regulators need to weigh both the goal of preserving the resource, and risk factors such as the possibility of accidental ingestion by a child from a domestic well.

At Site 7, the groundwater is Class III. For Class III GW, there is much less weight given to protecting the resource, and the preamble to the NCP indicates that MCLs are not ARARs. Thus, remediation goals for Class III water need to be based on risk.

**Site 6 groundwater:** This GW is 5 feet bgs and is contaminated with VOCs. Site 6 is expected to be mixed use (Civic Core and Marina District). The FS includes two potential active remedies (both of which also include LUCs) as well as LUCs as a stand-alone remedy (that possibly includes MNA). There is some confusion on exactly what the substance of the GW LUCs would be. Specifically, for GW Alt. 3 (cleanup to commercial/industrial levels), Sec. 5.6.3 indicates that the remedy would include a LUC to prevent domestic use of the GW, while in 5.3.2.3. the FS indicates that this remedy includes a LUC to prevent residential use of the site. MCLs are included as ARARs in the Site 6 ARARs table, and the residential PRGs are calculated to include dermal,

ingestion, and inhalation pathways and are set equivalent to the MCLs. On the other hand, the ARARs discussion in the Site 6 chapter (Chapter 5) implies that only at Site 16 are MCLs being selected as ARARs

**Site 7 groundwater:** Here the GW is 3 to 3.5 feet bgs, and the reuse is residential (Main Street Neighborhoods). TDS exceeds 10,000 so it's Class III GW, so MCLs are not ARARs under federal law. But the Regional Board may consider MCLs to be ARARs under state law. Our main concern here is that the Navy appears to be not even considering the GW despite high cancer risk numbers (total  $3E-03$  with a background of  $2E-04$ ), and very high HI numbers (for a child, total of 33, background of 13, incremental of 20). Contaminants are arsenic, thallium, PAHs. The Navy is already doing a removal for TPH and MTBE – will that help with the other contaminants?

**Site 8 groundwater:** GW is 5 feet bgs and site is part of the Civic Core, intended for commercial and recreational reuse. The FS for Site 8 does not discuss GW ARARs because the Navy does not consider there to be any COCs

**Site 16 groundwater:** The Navy acknowledges that this is potential drinking water and that they are selecting MCLs as ARARs (although they discuss this in the chapter on Site 6 rather than the chapter on Site 16 – but they do state in the ARARs appendix that MCLs are ARARs for Site 16). The GW averages 5 feet bgs and the reuse is non residential – industrial and open space. They appear to be relying on MNA to eventually get to MCLs, although they don't present MNA as a remedy component. The LUCs under the LUC alternative and the industrial-cleanup alternative are for no residential use of the water, not of the property. They do include a residential cleanup remedy.

(a) If they are relying on MNA, they need to include MNA as a remedy and demonstrate that it meets EPA criteria for using MNA.

(b) The LUC should be no residential use of the property. This shouldn't be a problem as the reuse is nonresidential. There could be a two-stage remedy if there is a possibility for residential use.

## **EXECUTIVE SUMMARY**

1. **Lack of clarity:** (a) The executive summary of an FS should give the reader a snap shot of what to expect in the document. This is especially crucial in a complicated document like this one that involves 4 sites, 2 media, and multiple contaminants. It would be helpful to have in the executive summary a short paragraph on each site summarizing the nature of the site, the anticipated reuse, and what COCs the Navy intends to address at the site. (b) It is confusing for the second paragraph to suggest that soil contamination is only being addressed for sites 7 and 8, when the bullets immediately following describe all four sites. This should be clarified in the document. (c) EPA recommends explaining at the beginning that even though the soil near the OWSs has not been characterized, the FS evaluates remedies to address contamination that may be found during the characterization of these areas.

## **Chapter 1 – INTRODUCTION**

2. **P. 1-2.** The FS says that the Navy is not addressing PAHs because they are “attributable primarily to the Marsh Crust. Marsh Crust ICs will not protect against any risk from PAHs in soil 0-8 feet bgs.

## **Chapter 2 – HISTORY & SETTING**

3. **P. 2-9, Sec. 2.4.3—GW Beneficial Uses:** The statement that GW at Sites 6 and 8 is not considered a DW source is an overstatement and is a mischaracterization of EPA’s letters. The Navy should include a fuller analysis of the GW either here or in the separate FS chapters. See general comments on GW.

## **Chapter 5 – SITE 6 FS EVALUATION**

4. **P. 5-4, discussion of chemical-specific soil ARARs.** In the discussion of RCRA, the FS should note that RCRA requirements, even if not applicable, are generally found to be appropriate and relevant at CERCLA sites. This should also be done in the discussions of RCRA in the chapters dealing with the other sites.
5. **p. 5-5. Groundwater chemical-specific ARARs for Site 6.** It is too facile to say that this is not a potential DW source. Rather, under EPA guidance, it is Class II groundwater and is considered to be potential drinking water, although we acknowledge that actual domestic consumption of this groundwater is not likely. In any event, Class II water generally requires MCLs as ARARs, and a fuller discussion is necessary. It appears from Table 5-2 that the Navy is including MCLs as ARARs for Site 6, although this is not apparent from the text. There should be a more complete discussion of whether MCLs are ARARs for the GW at site 6. See also General Comment
6. **P. 5-21, Sec. 5.3.2.2, GW Alt. 2.** It is not clear whether “groundwater contaminant examination” is a longer phrase for “monitoring” as a remedy component, or whether it refers to MNA as a potential stand-alone remedy. This should be clarified, and the standard terms should be used.
7. **P. 5-21, Sec. 5.3.2.3, GW alt. 3.** This section indicates that the LUCs for this alternative would prevent both domestic use of GW and residential use of the site, while later, in Sec. 5.6.3, only a prohibition on domestic use of the GW is included. EPA recommends that the LUC include prevention of residential use of the site, as stated in this section.
8. **P. 5-21, Sec. 5.3.2.3., GW alt. 3.** The FS discusses “GW contaminant examination” for 30 years. It is not clear whether this means that the Navy intends to monitor for 30 years, or that they expect that 30 years of natural attenuation will be necessary, or both. The suggestion is that the active remediation will not attain PRGs, but this is not clear. Their discussion of Alt. 4 is similarly confusing.

#### **Sec. 5.4. Detailed Analysis of Soil Alternatives**

9. **P. 5-24 and elsewhere, soil alt. 2 (LUCs).** Although there is much discussion of the vehicles for implementing LUCs (land use covenant, etc.), there is not a clear discussion of what the substance of the LUCs would be. It is unclear whether the LUCs would be engineering controls (p. 5-10 & 5-12), or a restriction on residential use of the property (p. 5-30), or something else.
10. **P. 5-24, Sec. 5.4.2.1, soil alt. 2 (LUCs).** Identifying the nature and extent of contamination does NOT protect human health. What is the LUC? This paragraph is not sufficient.
11. **P. 5-25, soil alt. 2 (LUCs), long-term effectiveness.** It is difficult to see how this meets the overall protectiveness criterion if it is not considered a permanent alternative, as acknowledged in sec. 5.4.2.3.
12. **P. 5-26, Sec. 5.4.3.1, discussion of soil alt. 3 (excavation).** For the first time in this FS, there is mention of runoff and wind erosion. If that is a concern, it should also be discussed in relation to the previous alternative of LUCs.
13. **P. 5-31, Sec. 5.5.2.2, Comparative Analysis for Soil Alternatives.** LUCs don't reduce toxicity.

#### **5.6 Detailed Analysis of Alternatives for GW**

14. **P. 5-32, Sec. 5.6.1.2, GW Alt. 1 (no action), Compliance with ARARs.** It is not apparent how the no-action alternative will comply with ARARs, assuming that MCLs are ARARs. If the Navy is relying on natural attenuation to reach chemical-specific ARARs, that should be analyzed as an MNA remedy. Even if there is some evidence that natural attenuation is occurring, it cannot be assumed that the no-action alternative will comply with ARARs without a means of checking this, e.g. through a MNA remedy. This comment also applies to the comparative analysis on p. 5-40, Sec. 5.7.1.2.
15. **P. 5-33, GW Alt. 2 (LUCs), LUC bullets:** There should be a Navy deed restriction, not just a deed notice.
16. **P. 5-34, Sec. 5.6.2.2, GW Alt. 2 (LUCs).** If the Navy is relying on natural attenuation to meet ARARs, the remedy should be analyzed as a MNA remedy. This again raises the issue of what does "groundwater contaminant examination" means.
17. **P. 5-35, Sec. 5.6.3, GW Alt. 3 (treatment to commercial/industrial).** This paragraph is confusing, as the remedy appears aimed at attaining commercial/industrial levels, while the first paragraph indicates that treatment will continue until concentrations are reduced to levels below domestic remediation goals, suggesting that treatment could continue for 30 years. Thus, there is confusion on how this alternative differs from Alt. 4 (treatment to unrestricted levels).

18. **Sec. 5.6.4, GW Alt. 4 (treatment to unrestricted).** Are the target concentrations in fact lower for Alt. 4 than for Alt. 3, or is it the short-term target concentrations that are lower (or the concentrations to be achieved by the active treatment)?
19. **Sec. 5.6.4.1, GW Alt. 4 (treatment to unrestricted).** If the remediation goals will be met within 3 to 4 ½ years, why is GCE (MNA?) necessary?

#### **Chapter 6 – SITE 7 FS**

20. **P. 6-4, Sec. 6.1.3.1., ARARs.** The FS states that there are no chemical-specific ARARs “because COCs exceeding risk criteria have not been identified at Site 7.” This is not the correct analysis. Even subtracting out background, the cumulative HI is 20. Even if MCLs are not federal ARARs for Class III groundwater, they may be ARARs under State law if the Regional Board does not determine that the GW should not be protected. Additionally, even if MCLs are not ARARs, the Navy needs to determine whether the GW at Site 7 needs to be addressed due to the risk of accidental ingestion in a neighborhood of detached homes, with GW 3 feet bgs, on the east side of the base fairly close to wells.
21. **P. 6-7, Sec. 6.3.5., analysis of no-action alternative, short-term effectiveness.** This criterion is analyzed differently for the no action alternative for Site 7 than for Site 8, where it is concluded that no action is not effective in the short-term because there is no remedial action. EPA prefers the Site 8 analysis. This criterion is analyzed for Sites 6 and 16 the same way it is analyzed for Site 7, and our comment applies to those sites also.

#### **Chapter 8: SITE 16 FS**

22. **Sec. 8.1.3, ARARs.** While the Site 16 ARARs table includes MCLs as relevant and appropriate, the text in Sec. 8.1.3 does not include them. MCLs should be included as a chemical-specific ARAR for all scenarios, not just as a remediation goal for a residential reuse scenario. The discussion of the Site 16 GW ARARs in Chapter 5 (for Site 6) should be moved to the Site 16 chapter.
23. **Sec. 8.2.2.2, LUCs.** The Navy should discuss the substance of the LUCs (e.g. no excavation, no residential reuse).
24. **8.3.2.2, GW Alt. 2 (LUCs and “groundwater contaminant examination”).** Again, the Navy needs to clarify whether GCE is a new term for monitoring, or if they are contemplating MNA as an aspect of this remedy. The same comment applies to the GCE portion of the active remedies.
25. **Sec. 8.6.1.2, GW Alt 1 (no action), Compliance with ARARs.** It is not accurate to say that this remedy will comply with ARARs through natural attenuation because there will not be monitoring to confirm that. If the Navy is evaluating a MNA remedy, it should be presented separately from no action.

26. **Sec. 8.6.2, GW Alt. 2 (LUCs).** This is another place where it is unclear whether there is a MNA component. Without it, there is no evidence that this remedy will meet ARARs. If the Navy is including MNA as part of a remedy, they need to show that it will satisfy EPA policy on MNA. Also, they should indicate how long it will take this remedy to achieve ARARs.
27. **Sec. 8.7.5, GW Comparative analysis, short-term effectiveness.** Short-term effectiveness will vary greatly among the alternatives because Alt. 4 will achieve MCLs in the short-term but the others will not. This should be reflected in the analysis.
28. **Sec. 8.7.6, GW comparative analysis, implementability.** Alt. 3 and 4 should not be considered the same in terms of LUCs, as Alt. 4 would require them for a much shorter time.
29. **Sec. 8.7.7, GW comparative analysis, cost.** It is not clear how long LUCs will be necessary for the various alternatives. The Navy includes 30 years for Alt. 3. One would assume that Alt. 2 would require more than 30 years of LUCs and Alt. 4 less than 30 years. There is mention in section 8.7.8 that Alt. 2 will take 37 years; this should be explained earlier.
30. **Table 8-5, pages 1-2, LUCs.** The discussion of the LUCs should include a deed restriction in Navy deed of the property.

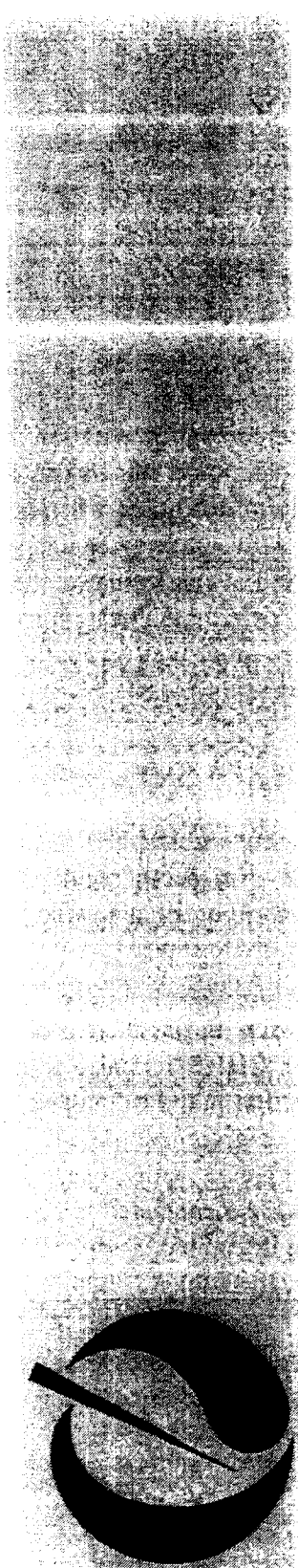
## **APPENDIX B: ARARs**

[Comments regarding ARARs also apply in many cases to the ARARs discussions in the separate FS chapters and generally are not made separately in those chapters.]

31. **General comment:** EPA greatly appreciates the focused ARARs discussion in this FS.
32. **P. B-8, Sec. B1.2.3.2. Chronology of Efforts to Identify State ARARs.** EPA urges the State to submit an up-to-date list of State ARARs as soon as possible to incorporate any changes in requirements or analysis since DTSC's 1996 submission.
33. **P. B11-12.** The FS appears to assume that some of the waste will be RCRA characteristic HW and that the soils will need to require stabilization prior to disposal. Are there ARARs for that process?
34. **P. B-13 – B-14, B2.1.1, Groundwater ARARs.** See general comments. Also,
  - (a) The Navy should explain why California MCLs rather than federal MCLs are considered to be relevant and appropriate. A chart with the relevant numbers would be helpful.
  - (b) The Navy should ascertain the current status of the Regional Board's proposed de-designation of GW in this OU from the MUN designation.

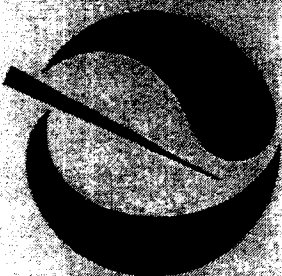
(c) P. B-20, language concerning California's position on SWRCB Resolutions is copied from the ROD for another base and would need to be edited to have any meaning in this FS.

35. **P. B-22** third paragraph says that as long as excavated material remains inside the AOC it is not newly generated and will not be subject to RCRA generator, treatment or other waste management requirements. This statement is somewhat misleading, as it implies that RCRA requirements will not be considered to be ARARs because the excavated material would remain in the AOC. However, while land disposal requirements do not apply within an AOC, other RCRA requirements are often found to be ARARs. It appears, however, that the Navy is identifying 22 CCR 66262.34 as applicable for the temporary storage of waste within the AOC.
36. **P. B-25, B3.1.1. ESA.** Consultation requirements are generally not considered to be TBCs, although EPA encourages the Navy to follow such requirements.
37. **P. B-26**, first line, remove the second "is."
38. **Sec B4.2.1. RCRA Requirements.** In the discussion of 22 CCR 66262.34, the FS should note that this ARAR in turn triggers other requirements depending on whether the waste is placed in containers, tanks, drip pads, or containment buildings.
39. **P. B-27, B4.2.2.ICs.** The FS says that at Site 6, ICs "will" be implemented to prevent residential reuse of the property. Should "will" be "may"?
40. **P. B-27, Federal Hazardous Materials Transportation Law.** EPA does not consider requirements based on the Federal Hazardous Materials Transportation Law to be ARARs because they are not based on an environmental law.
41. **P. B-28, ICs.** The paragraph that EPA does not agree that certain sections of the California codes are ARARs should be removed. EPA has reconsidered statements to that effect submitted in previous Alameda documents.
42. **P. B-29, B4.2.2.3, Vapor Removal.** This paragraph is confusing because it states that there are no ARARs for this part of the remedy, but it also indicates that the system would be installed in accord with BAAQMD regulations, suggesting that there may be some BAAQMD ARARs that should be considered. This should be clarified.
43. **Sec. B4.3, Soil Alt. 3, Excavation, Action-Specific ARARs.** Would substantive NPDES requirements found in the general permit for stormwater runoff from construction sites apply to any of the excavation remedies in this FS?
44. **GW ARARs:** EPA does not believe UIC requirements would be ARARs for ISCO or HRC.



# **Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties**

**January 2005**



**California Environmental Protection Agency**

Table 2. California Human Health Screening Levels for Indoor Air and Soil Gas

Chemical	<sup>1</sup> Indoor Air Human Health Screening Levels ( $\mu\text{g}/\text{m}^3$ )		<sup>2</sup> Shallow Soil Gas Human Health Screening Levels (Vapor Intrusion) ( $\mu\text{g}/\text{m}^3$ )	
	Residential Land Use	Commercial/Industrial Land Use Only	Residential Land Use	Commercial/Industrial Land Use Only
Benzene	8.40 E-02	1.41 E-01	3.62 E+01	1.22 E+02
Carbon Tetrachloride	5.79 E-02	9.73 E-02	2.51 E+01	8.46 E+01
1,2-Dichloroethane	1.16 E-01	1.95 E-01	4.96 E+01	1.67 E+02
<i>cis</i> -1,2-Dichloroethylene	3.65 E+01	5.11 E+01	1.59 E+04	4.44 E+04
<i>trans</i> -1,2-Dichloroethylene	7.30 E+01	1.02 E+02	3.19 E+04	8.87 E+04
Ethylbenzene	Postponed <sup>3</sup>	Postponed <sup>3</sup>	Postponed <sup>3</sup>	Postponed <sup>3</sup>
Mercury, elemental	9.40 E-02	1.31 E-01	4.45 E+01	1.25 E+02
Methyl tert-Butyl Ether	9.35 E+00	1.57 E+01	4.00 E+03	1.34 E+04
Naphthalene	7.20 E-02	1.20 E-01	3.19 E+01	1.06 E+02
Tetrachloroethylene	4.12 E-01	6.93 E-01	1.80 E+02	6.03 E+02
Tetraethyl Lead	3.65 E-04	5.11 E-04	2.06 E-01	5.78 E-01
Toluene	3.13 E+02	4.38 E+02	1.35 E+05	3.78 E+05
1,1,1-Trichloroethane	2.29 E+03	3.21 E+03	9.91 E+05	2.79 E+06
Trichloroethylene	1.22 E+00	2.04 E+00	5.28 E+02	1.77 E+03
Vinyl Chloride	3.11 E-02	5.24 E-02	1.33 E+01	4.48 E+01
<i>m</i> -Xylene	7.30 E+02	1.02 E+03	3.19 E+05	8.87 E+05
<i>o</i> -Xylene	7.30 E+02	1.02 E+03	3.15 E+05 <sup>4</sup>	8.79 E+05 <sup>4</sup>
<i>p</i> -Xylene	7.30 E+02	1.02 E+03	3.17 E+05	8.87 E+05

**Reference:** Appendix I, OEHHA Target Indoor Air Concentrations and Soil-Gas Screening Numbers for Existing Buildings under Residential and Industrial/Commercial land uses.

**Notes:**

- "Residential Land Use" screening levels generally considered adequate for other sensitive uses (e.g., day-care centers, hospitals, etc.). Commercial/industrial properties should be evaluated using both residential and commercial/industrial CHHSLs. A deed restriction that prohibits use of the property for sensitive purposes may be required at sites that are evaluated and/or remediated under a commercial/industrial land use scenario only.
- Calculation of cumulative risk may be required at sites where multiple contaminants with similar health effects are present.
- Carcinogens: CHHSLs based on target cancer risk of 10<sup>-6</sup>. Cal/EPA cancer slope factors used when available.
- Noncarcinogens: CHHSLs based on target hazard quotient of 1.0.
- Soil Gas: Screening levels based on soil gas data collected <1.5 meters (five feet) below a building foundation or the ground surface. Intended for evaluation of potential vapor intrusion into buildings and subsequent impacts to indoor-air. Soil gas data should be collected and evaluated at all sites with significant areas of VOC-impacted soil. Screening levels also apply to sites that overlie plumes of VOC-impacted groundwater.
- Calculation of a screening number for the chemical has been postponed (pp) until the toxicity criterion currently being developed by OEHHA is published as a final document.
- Representative Screening Numbers for mixed xylenes. The representative value for mixed xylenes is based on the calculated lowest one amongst the three isomers.